The Pennsylvania State University
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USING ANTS TO FIND COMMUNITIES IN COMPLEX NETWORKS

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by
Mohammad Adi

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The thesis of Mohammad Adi was reviewed and approved* by the following:

Thang N. Bui
Associate Professor of Computer Science
Chair, Mathematics and Computer Science Programs
Thesis Advisor

*Signatures are on file in the Gradute School.

Abstract

Many systems arising in different fields can be described as complex networks, a collection of nodes and edges. An interesting property of these networks is the presence of communities (or clusters), which represents a subset of nodes within the network such that the connections within these nodes are denser than the connections with the rest of the network. In this thesis, we give an ant-based algorithm for finding communities in complex networks. Ants are used to identify edges which are used to assign the nodes into different clusters. Tests on various synthetic and real-world networks show that the algorithm is able to extract the community structure very well and performs well against other algorithms.

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Chapter 1

Introduction